

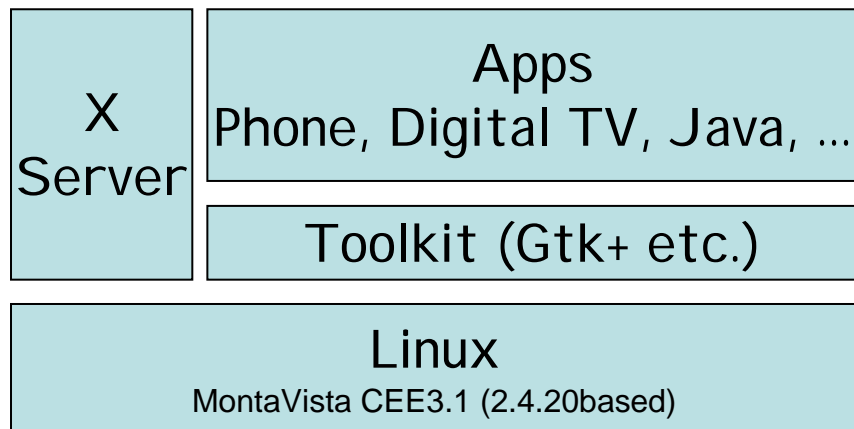


Mobile Phone Powered by Linux

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What is demonstrated

Mobile Phone built on top Linux and X
Featuring Digital TV



Key technologies to make it work on Linux

- 1.Reduction of memory footprint
 - “Allocate on Write” (our original improvements)
 - XIP (eXcute In Place), ARM Thumb® code
2. Prelink to improve key response/boot time
3. Avoiding priority inversion for RT Apps by eliminating inter-threads race conditin (heap, file, mutex ...)

Hardware Information

Panasonic *UniPhier*® (ARM11 core included)

How was the Linux improved

“Allocate on Write”

Defer RAM page allocation for .data until process writes to the page (Normal Linux allocates the page on ether read or write)

Implementation

No change in kernel code.

Small change to the runtime dynamic linker:

1. Drop PROT_WRITE bit when “mmap”ing ELF data segment

By this, the kernel (CRAMFS) maps the segment to ROM page just as XIP text segment.

2. Then, set PROT_WRITE by mprotect()

By this, copy-on-write is enable to the mapped segment memory.

Page is copied to RAM when write occurs.
Until then read is routed to ROM.

Patch (Source Code) Availability

Some patches including “Allocate on Write” and thumb® tool chain are available on CELF public Wiki pages.